providing an artificial blood vessel inner layer comprising a supple tubular section having inner and outer surfaces, at least one end section of said tubular section folded back over said outer surface creating an enclosure, and a stent enclosed within said enclosure;

inserting the stented end of said artificial inner layer into said blood vessel through the incision in the direction of blood flow;

positioning said artificial inner layer within said blood vessel so that said end section enclosing said stent is positioned adjacent said end at a downstream location from said incision flap; and

retaining said end flap between said end section and said blood vessel by expanding said stent.

15. (As Previously Added) A method as in claim 14, wherein said providing step comprises providing an artificial blood vessel inner layer having a tubular section comprising a fluoro carbon polymer.

16. (As Previously Added) A method as in claim 14, wherein said providing step comprises providing an artificial blood vessel inner layer having a tubular section that has a length at least as long as said removed section of blood vessel inner layer.

17. (As Previously Added) A method as in claim 14, wherein said providing step comprises providing an artificial blood vessel inner layer having a stent comprising a stainless steel gauze.

18. (As Previously Added) A method as in claim 14, wherein said providing step comprises providing an artificial blood vessel inner layer having a stent comprising a length of memory metal preprogrammed to expand at a determined temperature.

19. (As Previously Added) A method as in claim 14, wherein said providing step comprises providing an artificial inner layer having an enclosure comprising a fluid-tight enclosure.

20. (As Previously Added) A method as in claim 14, wherein said positioning step comprises positioning said artificial inner layer using a catheter.

21. (As Previously Added) A method as in claim 20, wherein said catheter comprises a guide wire and a sheath.

22. (As Previously Added) A method as in claim 20, wherein said catheter comprises a blood vessel widener.

23. (As Previously Added) A method as in claim 22, wherein said widener comprises a cone-shaped element operably attached to a distal end of said catheter.

24. (As Previously Added) A method as in claim 22, wherein said widener comprises an inflatable balloon operably attached to a distal end of said catheter.

25. (As Previously Added) A method as in claim 22, wherein said widener is wider than said end section during said inserting step and narrower than said end section after said retaining step due to said stent enclosed within said end section expanding during said expanding step.

26. (As Previously Added) A method as in claim 22, wherein said widener has substantially the same diameter as an internal diameter of said blood vessel.

27. (As Previously Added) A method as in claim 22, wherein said retaining step comprises using said widener to widen said stent in order to press said end section against said end flap.

28. (As Previously Added) A method as in claim 14, wherein said retaining step comprises retaining said end flap by expanding said stent so that an outer diameter of said tubular section is approximately equal to an inner diameter of said blood vessel.

29. (As Previously Added) A method as in claim 14, wherein the providing step comprises providing an artificial blood vessel inner layer further comprising two end sections creating two enclosures and two stents enclosed within said enclosures.